OPERATION AND INSTRUCTION MANUAL

EMCO MODEL 3104 BICONICAL ANTENNA

Serial No. 2374

EMCO
The Electro-Mechanics Company
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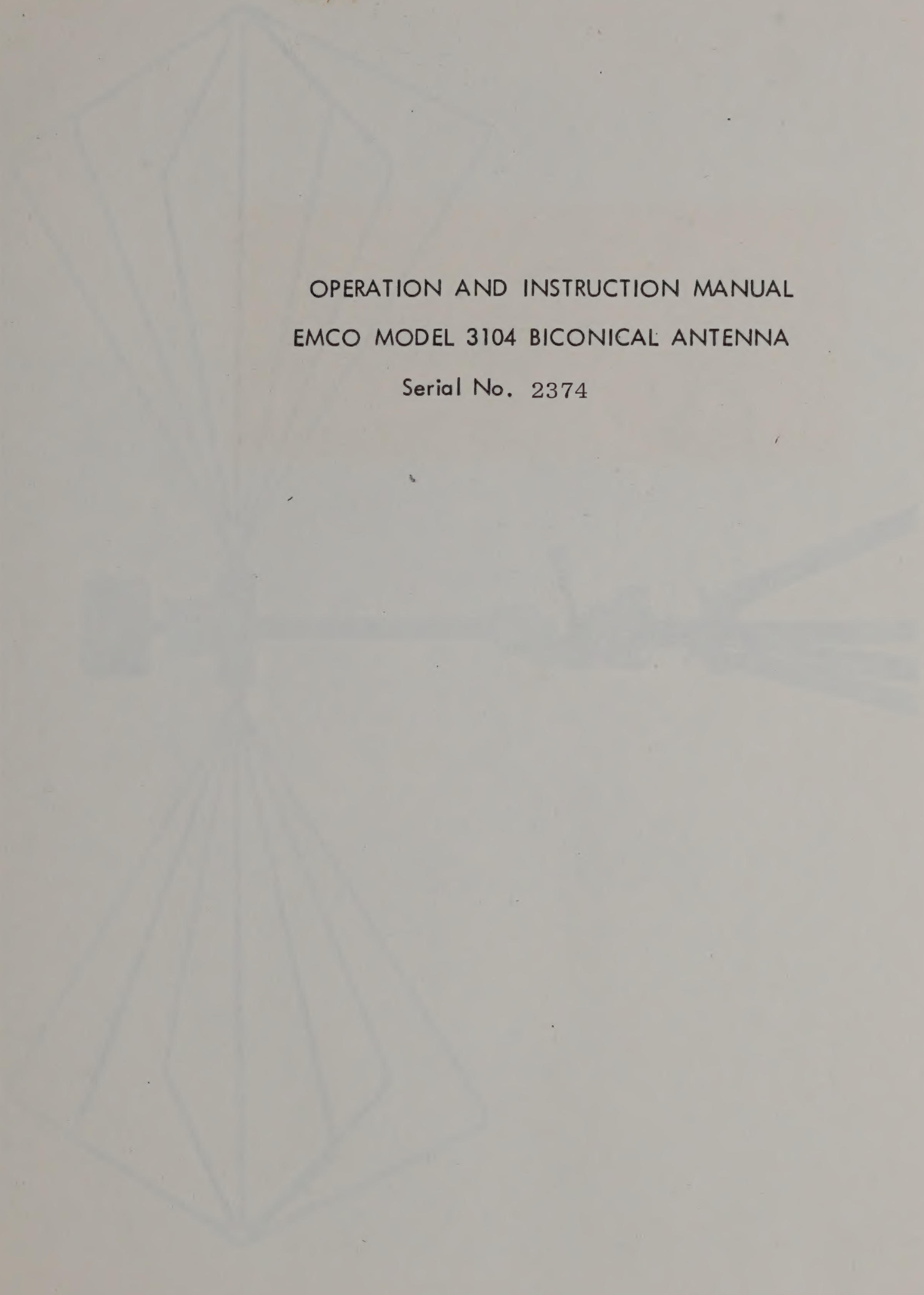

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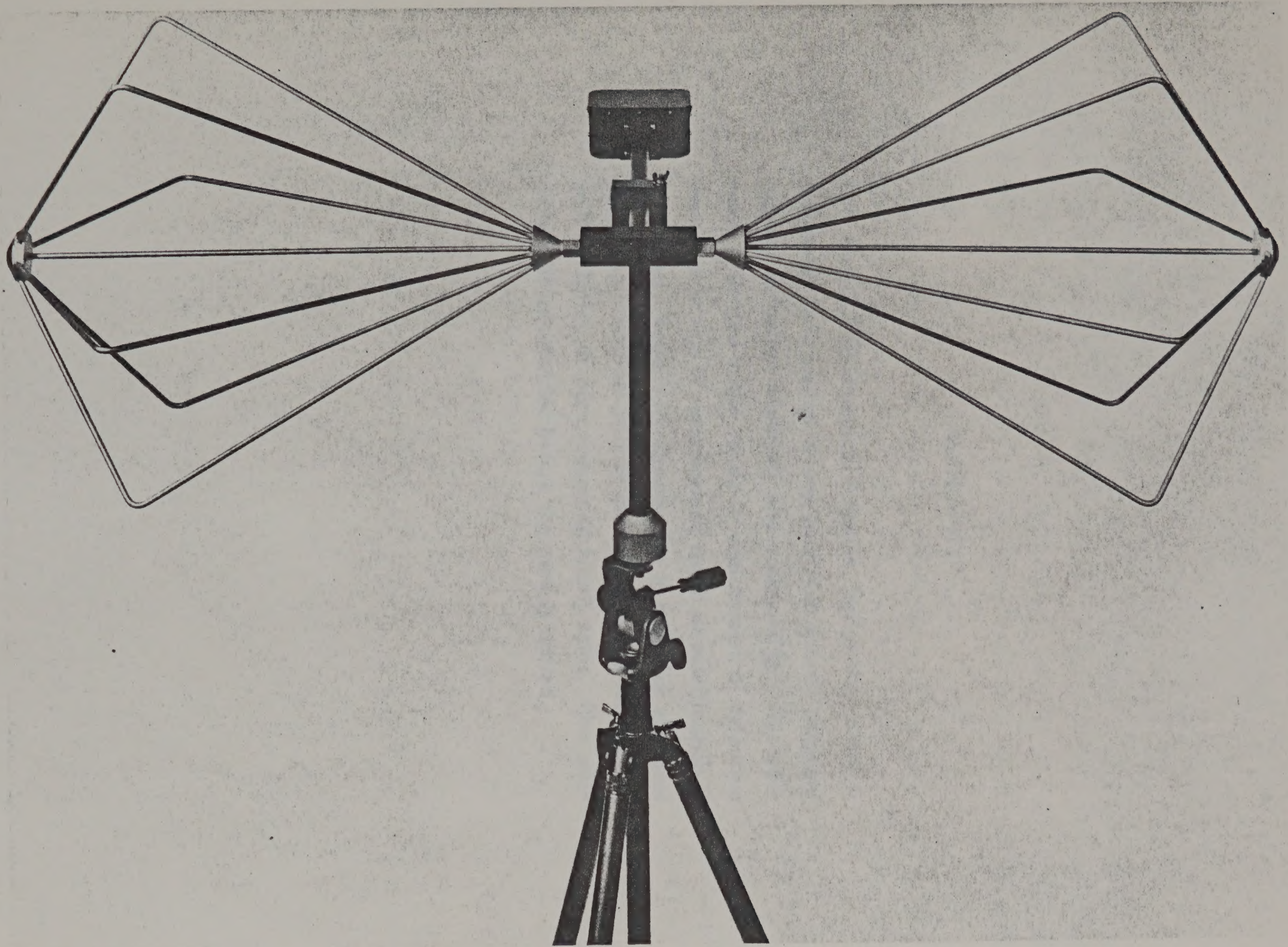

EMCO MODEL 3104 BICONICAL ANTENNA

WARRANTY

This Model 3104 Biconical Antenna, Serial No. 2374 is warranted for a period of one year from date of shipment against defective materials and workmanship. This warranty is limited to the repair or replacement of defective parts and is void if unauthorized repair or modification is attempted. Repairs for damage due to misuse or abnormal operating conditions will be performed at the factory and will be billed at our commercial hourly rates. Our estimate will be provided before the work is started.

DESCRIPTION AND USE OF THE
EMCO MODEL 3104 BICONICAL ANTENNA

GENERAL DESCRIPTION

The EMCO Model 3104 Biconical Antenna is designed to operate over the 20 MHz to 200 MHz frequency range for measurements to meet Military and DoD EMI specifications. It is of lightweight construction for ease in portability and storage.

The Biconical elements are made from aluminum rods and are joined by tack welds. The elements mount in a balun network which is fabricated of phenolic and the necessary impedance-matching components.

The Model 3104 is precisely designed and manufactured in accordance with Drawing ES-F-201286 and MIL-STD-461A. Each antenna is calibrated during manufacturing. The results of the calibration are tabulated on pg. 2 of this manual as gain and antenna factor vs frequency for use in Specification Compliance Testing.

SPECIFICATIONS

Frequency Range: 20 to 200 MHz
Impedance: matched to 50 ohms
Length: 54.5 inches tip-to-tip
Diameter: 21 inches maximum
Depth: 32 inches including balun
Weight: 6 lb.

GAIN AND ANTENNA FACTOR

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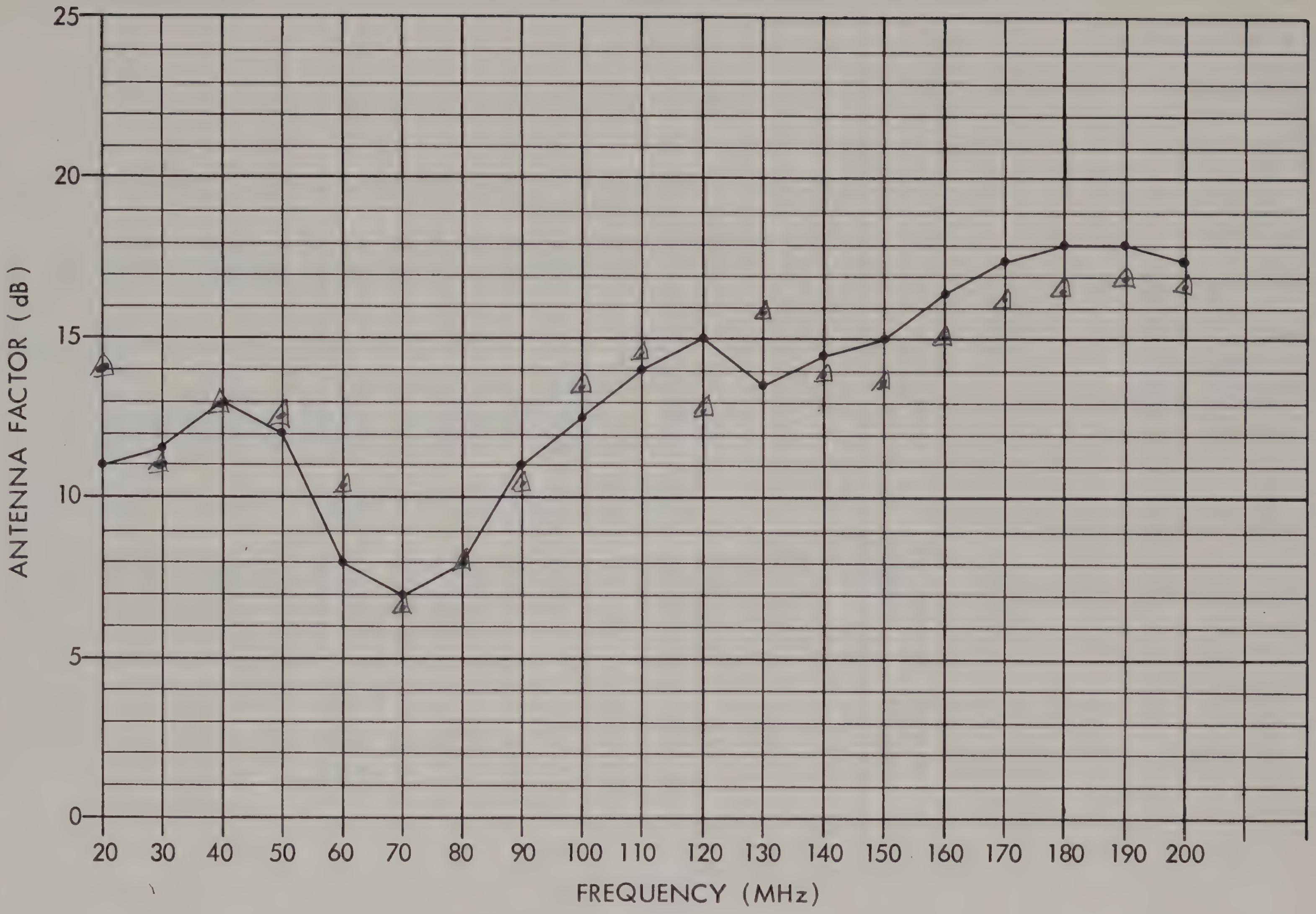
Frequency (MHz)	Gain	Antenna Factor* (db)
20	.0167	14.036
30	.0749	11.047
40	.0840	13.046
50	.1400	12.765
60	.3550	10.307
70	1.1020	6.727
80	1.0597	8.057
90	.7521	10.568
100	.4700	13.526
110	.4608	14.440
120	.7967	12.817
130	.4582	15.915
140	.8283	13.987
150	.9958	13.787
160	.8437	15.067
170	.7121	16.330
180	.7540	16.578
190	.7513	17.063
200	.8874	16.786

*Specification Compliance Testing Factor (1.0 meter spacing) to be added to receiver meter reading in dbμv to convert to field intensity in dbμv/meter.



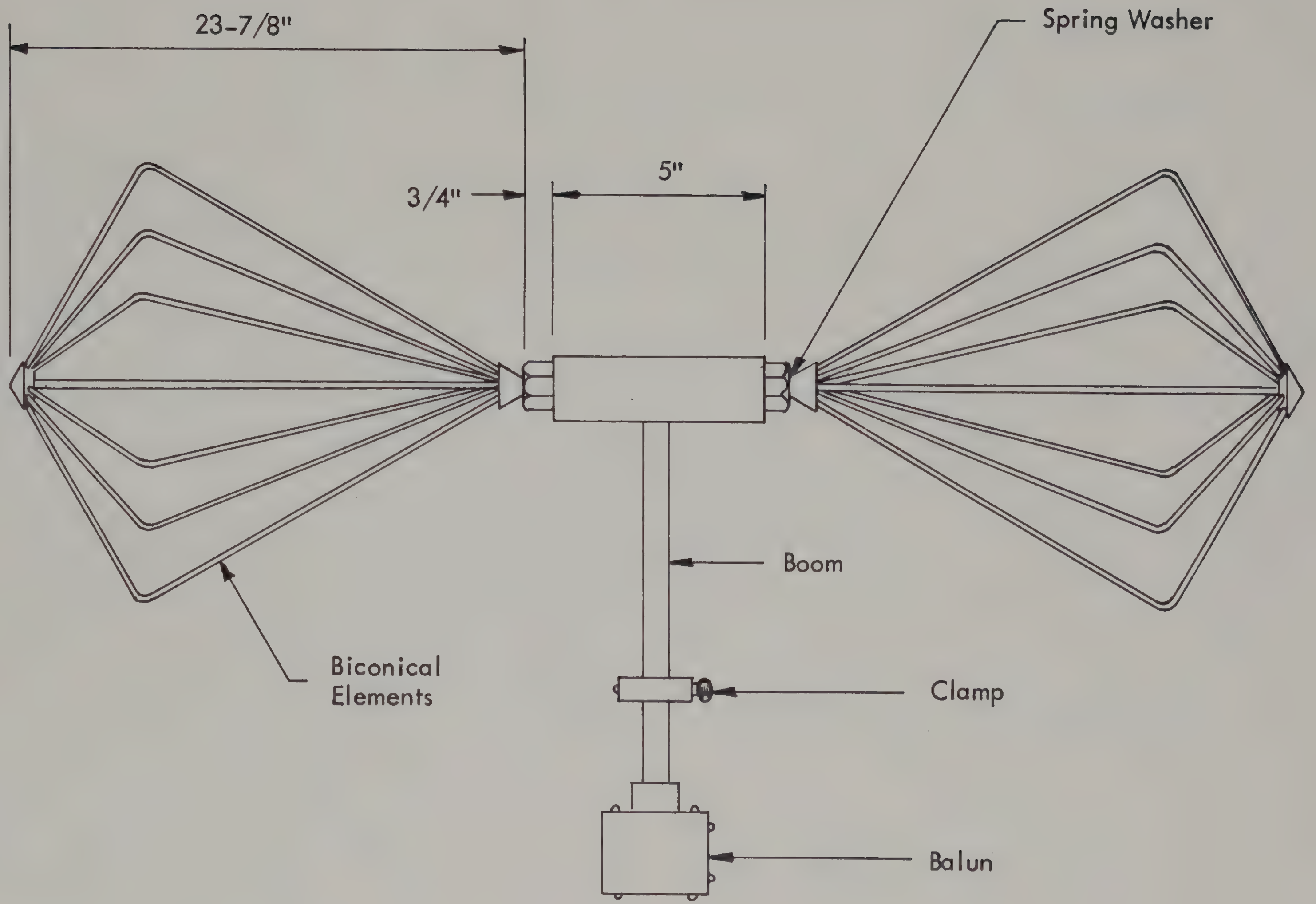
Typical Antenna Factor vs Frequency for the EMCO Model 3104 Biconical Antenna

PENCIL IS OURS — S/N 2374

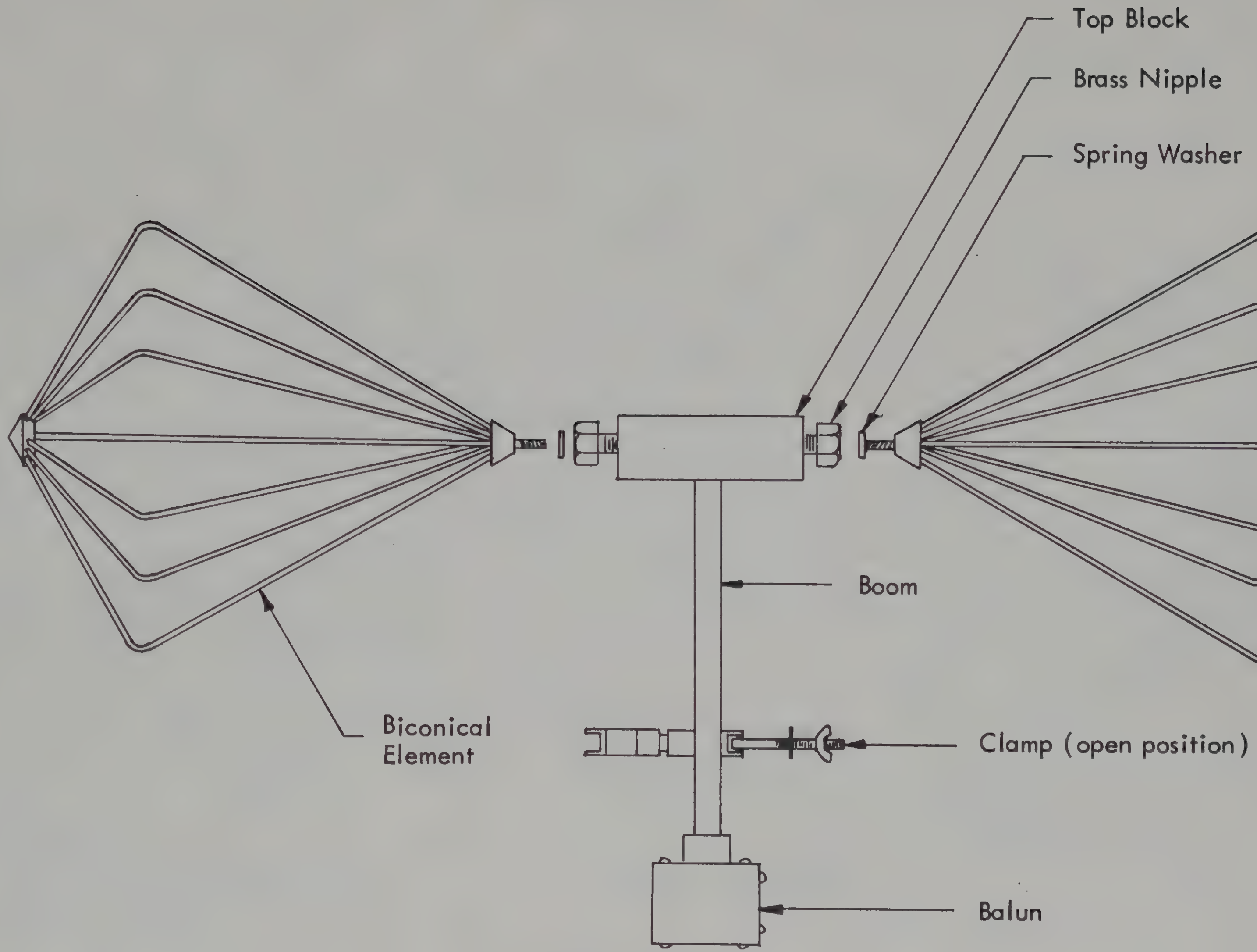
APPROXIMATE POWER REQUIREMENTS VS FREQUENCY FOR FIELD STRENGTHS AT 1 METER SPACING

EMCO Model 3104 Biconical Antenna

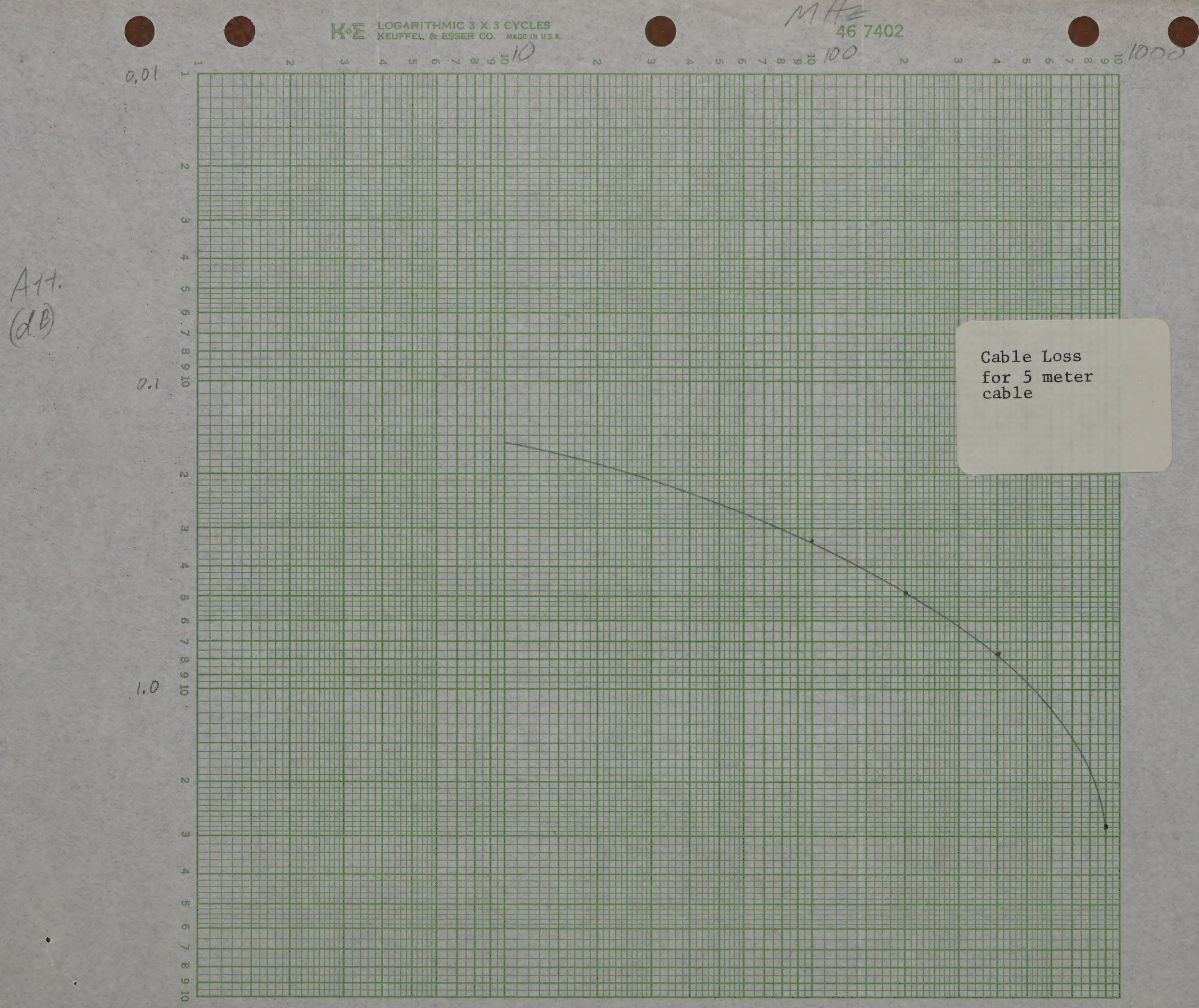
Frequency (MHz)	Typical Gain	Field Strength			
		1V/M (watts)	5V/M (watts)	10V/M (watts)	20V/M (watts)
20	0.03	1.1	27.5	110.	440.
30	0.05	0.66	16.5	66.	264.
40	0.08	0.41	10.3	41.	165.
50	0.15	0.22	5.5	22.	88.
60	0.45	0.073	1.8	7.3	29.
70	1.13	0.029	0.73	2.9	11.7
80	1.00	0.033	0.83	3.3	13.2
90	0.84	0.039	0.98	3.9	15.7
100	0.42	0.079	1.96	7.9	31.4
110	0.37	0.089	2.23	8.9	35.7
120	0.56	0.059	1.47	5.9	23.6
130	0.97	0.034	0.85	3.4	13.6
140	0.78	0.042	1.06	4.2	16.9
150	1.25	0.026	0.66	2.6	10.6
160	0.67	0.049	1.23	4.9	19.7
170	0.64	0.052	1.29	5.2	20.6
180	0.67	0.049	1.23	4.9	19.7
190	0.67	0.049	1.23	4.9	19.7
200	0.56	0.059	1.47	5.9	23.6



Detail of the Model 3104 Biconical Antenna



Assembly Instruction for the EMCO Model 3104 Biconical Antenna



Cable Loss
for 5 meter
cable